

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1 -12. (Cancelled)

13. (Currently Amended) A method for estimating a memory-enabled transmission channel, comprising the steps of:

determining a first estimation \hat{h} of a pulse response of the memory-enabled transmission channel;

performing an estimation of an additive interference of the memory-enabled transmission channel; and

performing a correction of the first estimation of the pulse response while taking into consideration the estimation of the additive interference of the memory-enabled transmission channel.

14. (Previously Presented) The method according to claim 13, wherein: the step of determining the first estimation is performed by a matched filter.

15. (Previously Presented) The method according to claim 14, wherein: the matched filter is given by

$$\hat{h} = \frac{1}{\gamma} \cdot G^{*T} \cdot \underline{e}_{\text{ref}}$$

where

$$G = \begin{pmatrix} r_w & r_{w-1} & \cdots & r_1 \\ r_{w+1} & r_w & & r_2 \\ \cdot & \cdot & & \cdot \\ r_{w+N-1} & r_{w+N-2} & \cdots & r_N \end{pmatrix}$$

and

$$\gamma = \frac{N}{L} \cdot \|r\|^2$$

$\underline{r} = (r_1, \dots, r_L)$ being a reference signal used for purposes of channel estimation, γ is a scaling factor, N is a length of a receiving-signal portion, L is a length of a chip pulse, G is a channel characteristic matrix and $\underline{e}_{ref} = (e_{refstart}, \dots, e_{refstart+N-1})$ being a received signal part that is not influenced by data transmitted before and after the reference signal.

16. (Previously Presented) The method according to claim 13, wherein: the first estimation is given by a least squares estimation.

17. (Previously Presented) The method according to claim 16, wherein: the least squares estimation is given by

$$\hat{\underline{h}} = (G^{*T} \cdot G)^{-1} \cdot G^{*T} \cdot \underline{e}_{ref}$$

18. (Previously Presented) The method according to claim 13, wherein: the step of performing the estimation of the additive interference is given by

$$\sigma^2 = \Theta \left(E - (1+f) \cdot \gamma \|\hat{\underline{h}}\|^2 \right) / (N - (1+f))$$

with

$$\Theta(x) = \begin{cases} x, & \text{if } x > 0 \\ \text{otherwise}, 0 \end{cases}$$

wherein f is a frequency value, N indicates a length of a receiving-signal portion and E is an energy value.

19. (Previously Presented) The method according to claim 13, wherein:

the correction of the first estimation \hat{h}_k of the k^{th} component, $k \in \{1, \dots, W\}$, of estimation vector $\hat{\underline{h}}$ of the pulse response \underline{h} is given by

$$\hat{h}_k = \begin{cases} 0, & \text{if } h_k^2 < \sigma^2 / \gamma \\ \text{otherwise } h_k \end{cases}$$

20. (Previously Presented) The method according to claim 13, wherein:

the correction of the first estimation \hat{h}_k of the k^{th} component, $k \in \{1, \dots, W\}$, of

estimation vector \hat{h} of the pulse response \underline{h} is given by

$$\hat{h}_k = \sqrt{\theta \left(\hat{h}_k^2 - \sigma^2 \right) / \gamma} \cdot \frac{\hat{h}_k}{|\hat{h}_k|}, \text{ if } \hat{h}_k \neq 0, \text{ and}$$

otherwise

$$\hat{h}_k = \mathbf{0}$$

21. (Previously Presented) The method according to claim 13, wherein:
the correction of the first estimation is given by a projected onto convex sets (POCS)
algorithm.

22. (Previously Presented) The method according to claim 13, wherein:
the correction of the first estimation is given by a minimum mean square error
(MMSE) algorithm.

23. (Previously Presented) The method according to claim 22, wherein:
the MMSE algorithm is given by

$$\hat{h} = (G^* \cdot G + \sigma^2 \cdot I)^{-1} \cdot G^* \cdot \underline{e}_{\text{ref}}$$

I being the unit matrix.

24. (Previously Presented) A device for estimating a memory-enabled transmission
channel, comprising:
a channel estimator;
an estimator of an additive interference, the channel estimator and the estimator of the
additive interference act on a received signal; and
a channel estimation correcting element for correcting a signal of the channel
estimator while taking into consideration an output signal of the estimator of
the additive interference of the memory-enabled transmission channel.